**Assignment no : 8 (Final Project)**

**Course :** CS-501 : [Introduction to JAVA Programming](https://sit.instructure.com/courses/37560)

**Tittle :** Network Programming. (Chat application facility).

(Choosen from given final project suggestion : final Project Type V)

**Project Members:**

|  |  |  |
| --- | --- | --- |
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**Description:**

This project involves communications between multiple clients and servers simulating interaction across a network (although for this project both can be on the same computer).

It involves creating GUIs on the client.

It uses TCP/IP protocols, and streaming I/O from one to the other. An application is a Chat facility.

**The server code does the following**:

1. Server initialize at default port\_number = 2345. Can also provide port\_number using command line also.
2. It handles multiple client using thread array (For Project simplicity we limit capacity of client as 10 specify using MAX\_CLIENTS\_COUNT = 10)
3. It synchronize clients thread.
4. The server will broadcast each client's message to all other clients or specific client. Can send private messages to a specific clients using **'@Client\_name'**
5. Once client chat is over can **leave chat using "quit"** keyword.

**The client code does the following:**

1. Client initialize at default port\_number = 2345 and hostname = “localhost”. Can also provide port\_number and hostname using command line also.
2. Create a socket for a client to establish a connection with the server.
3. Create read and write socket to transfer messages to the server and read from the server.
4. Client read/write a message to the server continuously until connection is closed.
5. Client communicate with other clients via server.

**The GUI code does the following** :

GUI is develop for client side only. Because communication takes place between multiple client via server. So server handles chats between clients and no need to develop GUI for same.

GUI have following component:

* TextArea : to display chats between clients.
* TextField : to write message.
* Button : to send message.

**To execute program follow step:**

1- Build and Run Server program : MultiThreadChatServerSync

2- Build and Run Client program : MultiThreadClient. For multiple client Run client program multiple times (set allow parallel execution = true , Run -> Edit configuration)

3- It ask for client name : Enter client name.

4- To broadcast message to all client : type message in textfield and send.

5- To send private message to other client : @client\_name message and send.

6- To quit chat type : “quit”